

## CLAIMS

1. A method of complex treatment of diesel fuel including heating diesel fuel, homogenization and separation in centrifugal force field in a rotor-disc vortex apparatus and fine filtration at a filtering porous partition of hydrophobic material, characterized in that heating of diesel fuel is carried out during the process of circulation in a closed circuit including a heat exchanger and a rotor-disc vortex apparatus of open type and additional filtration is carried out by a multilayer filter-reactor comprising granules of multifunctional catalyst, alkylating aromatic compounds, and a layer of a fill of powder of transitional metals or their oxides.
2. A method in accordance with claim 1, characterized in that additional filtration is carried out at temperature of fuel being treated  $25 \div 45^{\circ}\text{C}$  and at pressure differential at a filter-reactor to 0.2 MPa, and activated carbon impregnated with salts of metals Na, Ca, Mg, Mn or rare-earth metals or high-silica zeolite in hydrogenous form with addition of metal promoter of Cu Ba-LiBM, NaY, Co Na Y, CaNaY type, and a layer of fill is made in form of a porous structure with rectification fineness  $0.5 \div 1.5$  micron of powder of metals Fe, Ni, Cu, Cr, Ag, V, W, Mo or their oxides.
3. A method in accordance with claim 1, characterized in that after fine filtration at a filtering porous partition of hydrophobic material and at a multilayer filter-reactor fuel being treated is heated and stabilizing additives on the basis of surface-active substances are added with subsequent cooling of treated fuel before storage to environmental temperature.
4. A method in accordance with claims 1, 3, characterized in that heat extracted at cooling of treated fuel is used for heating diesel fuel before the rotor-disc vortex apparatus.
5. A vortex apparatus of rotor-disc type for complex treatment of diesel fuel comprising a case with inlet and outlet pipe connections in inner cavity of which a rotor with a set of conical trays with holes round the periphery zone is installed, characterized in that the inner cavity is connected with environment, the conical trays are made with destruction edge in form of flanging with slots and bends at the following correlation of geometric parameters:

$$D = (2,0 \div 2,5) d;$$

$$H = (0,75 \div 0,85) d;$$

$$\alpha = 45 \div 55^\circ$$

- 5 where: D = diameter of the large (lower) base of the conical tray;  
 H = height of the conical tray;  
 d = diameter of the small (upper) base of the conical tray;  
 $\alpha$  = angle between the generator and the large (lower) base of the conical tray.